

Amendments to the Claims:

1. (Cancelled).
2. (Currently Amended) A method according to claim ~~[[1]]~~ 14, wherein the lighting wavelength lies in the range about 300 nm to 370 nm.
3. (Currently Amended) A method according to claim ~~[[1]]~~ 14, wherein the wavelengths of ~~the above-specified~~ said two wavelength bands lie in the range ~~excitation wavelength to~~ about 450 nm - 600 nm, and in the range about 550 nm to 800 nm, respectively.
4. (Cancelled).
5. (Currently Amended) A method according to claim ~~[[4]]~~ 14, including accumulating fluorescence images in the above-specified high and low energy bands and visible wavelength images prior to processing them and displaying an image of the fluorescence spectral intensity ratio and an image of said zone of the tooth lighted in visible light.
6. (Currently Amended) A method according to claim ~~[[1]]~~ 14, including using the same laser generator to produce fluorescence exciting pulses and lighting at a visible wavelength, said pulses being of a duration lying in the range a few microseconds to one nanosecond or less.
7. (Previously Presented) A method according to claim 6, including using the same laser generator to produce synchronizing pulses.

8. (Currently Amended) Apparatus for acquiring and processing images of a tooth, the apparatus comprising a source of monochromatic light at a wavelength chosen to excite emission of fluorescence by the mineral part of the tooth, optical means for lighting a zone of the tooth and for picking up light coming from the tooth, means for transmitting the picked-up light to spectral filter means in two wavelength bands, one of which is in a high energy portion and the other of which is in a low energy portion of the emission spectrum, photoreceivers sensing the light leaving the spectral filter means, and data processor means receiving the signals delivered by the photoreceivers, ~~wherein the light source emits at a wavelength selected to excite emission of fluorescence by the mineral portion of the tooth~~, and the apparatus includes further comprising video means for taking images of the lighted zone of the tooth, shutter or time gate means associated with the video means for taking alternately images of the zone of the tooth as illuminated in visible light and fluorescence images of said zone in said high energy and low energy wavelength bands respectively of the emission spectrum, and wherein the data processor means ~~are designed~~ includes means to take the ratio at each point of the image between the intensities measured in said wavelength bands of the emission spectrum.

9. (Previously Presented) Apparatus according to claim 8, wherein the spectral filter means comprise interchangeable color filters or an acousto-optical filter or a liquid crystal filter or a set of dichroic mirrors.

10. (Previously Presented) Apparatus according to claim 8 wherein, wherein the transmission means comprise an optical fiber image guide or a glass bar boroscope having a transverse refractive index gradient.

11. (Previously Presented) Apparatus according to claim 8, wherein the lighting means comprise a laser generator associated with spectral filter means and controlled to produce pulses at different wavelengths for lighting the tooth in ultraviolet light and in visible light.

12. (Previously Presented) Apparatus according to claim 11, wherein the laser

generator is also controlled to produce synchronizing pulses.

13. (Previously Presented) Apparatus according to claim 8, including synchronizing means connected to the light source, to the video means for taking images, to the spectral filter means, to the shutter or time gate means, and to the data processor means.

14. (New) A method of acquiring and processing images of a tooth, comprising:
lighting a zone of a tooth in monochromatic light by alternating pulses at two different wavelengths, one in the ultraviolet wavelength spectrum and selected to excite emission of fluorescence by the mineral part of the tooth and the other in the visible wavelength spectrum;
using video means to take fluorescence images of the lighted zone of the tooth in two wavelength bands within the ultraviolet wavelength spectrum, one being a high energy portion and the other being a low energy portion of the emission spectrum, and also to take images of the zone lighted by pulses of visible wavelength;
measuring the spectral intensity of the emitted fluorescence in said two wavelength bands at each point of said images; and
taking the ratio at each point of the measurements in the two above-specified wavelength bands and comparing said ratio with predetermined values.